UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,258	02/25/2004	Baoguo Yang	. BP3005	2710

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EXAMINER
ODOM, CURTIS B

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/786,258	YANG ET AL.
	Examiner	Art Unit	
	Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 01 October 2006.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-4,6-8 and 10-31_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-4,6-8 and 10-31_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1-4, 6-8, and 10-31 have been considered

but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 1-4, 8, 10, 13-15, 18-22, 25-28, 31-34, and 37 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Sundaralingam (previously cited in Office Action 8/8/2005),

hereinafter referred to as Reference A in view of Sahlin et al. (U. S. Patent No. 2004/0156448).

Regarding claim 1, Reference A discloses a method (Fig. 2, page 2, line 17-page 3, line

20) to identify a modulation format (8psk or GMSK) of a data frame received from a servicing

base station by a mobile station in a cellular wireless communication system, the method

comprises:

receiving (Fig. 2, page 2, line 17-page 3, line 20 and page 10, lines 16-20) a first Radio

Frequency (RF) burst of the data frame from the servicing base station, wherein the first RF burst

carries a plurality of modulated symbols;

extracting (page 8, line 5-page 9, line 6 and column 10, lines 13-20) a training sequence

from the first RF burst using a channel estimator, wherein the training sequence comprises

modulated symbols;

processing (Fig. 2, blocks 14, 16, 18, and 20, page 8, line 5-page 9, line 6 and column 10,

lines 13-20) the training sequence assuming a first modulation format (GMSK modulation and

correlation) to produce a first channel energy (page 3, lines 1-20);

processing (Fig. 2, blocks 24, 16, 18, and 20, page 8, line 5-page 9, line 6 and column 10,

lines 13-20) the training sequence assuming a second modulation format (8PSK modulation and

correlation) to produce a second channel energy (page 3, lines 1-20);

determining (Fig. 2, block 22, page 3, lines 1-20) a greater channel (impulse response)

energy from the first channel energy and the second channel energy; and

identifying (Fig. 2, block 22, page 3, lines 1-20) the modulation format (8psk or GMSK)

of the first RF burst as corresponding to the greater channel (impulse response) energy.

Reference A does not disclose receiving a subsequent RF burst within the data frame

from the servicing base station, wherein the subsequent RF burst carries a plurality of modulated

symbols;

processing the training sequence assuming the first modulation format to produce a

subsequent first channel energy (page 3, lines 1-20);

accumulating the subsequent first channel energy with the first channel energy to produce

an accumulated first channel energy (accumulated tap energies);

processing the training sequence assuming the second modulation format to produce a

subsequent second channel energy (column 3, lines 1-20);

accumulating the subsequent second channel energy with the second channel energy to

produce an accumulated second channel energy;

determining a greater accumulated channel energy from the first accumulated channel

energy and the second accumulated channel energy; and

identifying the modulation format of the subsequent RF burst as corresponding to the

greater accumulated channel energy.

However, Sahlin et al. discloses a method of detecting a modulation format (8PSK or

GMSK) which involves generating quality measures (channel energies) to detect the modulation

format (sections 0041-0044). Sahlin et al. further discloses perfoming quality measurements on

training signals (section 0047). Sahlin et al. also discloses the quality measurements are

performed for all subsequent bursts in a received block (section 0075) to determine a total

(accumulated) quality measurement for detection of the modulation format (section 0075).

Therefore, it would have been obvious to one skilled in the art at the time the invention was

made to perform the identification procedure as disclosed by Reference A for multiple or

subsequent bursts as taught by Sahlin et al. since Sahlin states that averaging (accumulating) the

quality measures (channel energies) over multiple bursts increases the reliability of the detection

(identification) (see section 0074).

Regarding claim 2, which inherits the limitations of claim 1, Reference A discloses

processing the training sequence assuming the first modulation format to produce the first

channel energy further comprises derotating the symbols within the training sequence; and

processing the training sequence assuming the second modulation format to produce the second

channel energy further comprises derotating the symbols within the training sequence (Fig. 2,

blocks 14 and 24, page 10, lines 13-20), wherein the signals are derotated by the rotation angle.

Regarding claim 3, which inherits the limitations of claim 2, Reference A discloses the

first modulation format is GMSK; and the second modulation format is 8PSK (Fig. 2).

Regarding claim 4, which inherits the limitations of claim 1, Reference A discloses

extracting further comprises: processing the first RF burst to produce a baseband signal; and

extracting the training sequence from the baseband signal (page 8, lines 5-page 9, line 6),

wherein the demodulation produces a baseband signal and the training sequence is extracted and

stored to perform correlation to produce the channel impulse response.

Regarding claim 8, Reference A discloses a method to identify a modulation format of a

data frame transmitted between a servicing base station and a wireless terminal in a cellular

wireless communication system, the method comprises:

receiving (Fig. 5 and 6, page 8, line 5-page 9, line 6, and page 10, lines 16-20) a first

Radio Frequency (RF) burst of the data frame from the servicing base station, wherein the first

RF burst carries a plurality of modulated symbols;

extracting (Fig. 5, block 58, page 8, line 5-page 9, line 6) a training sequence from the

first RF burst, wherein the training sequence comprises modulated symbols;

producing (Fig. 5, block 60, page 8, line 5-page 9, line 6) a first channel estimate based

on the training sequence assuming a first modulation format (GMSK);

applying (Fig. 6, block 68, page 10, line 12-page 11, line 11) the first channel estimate to

a reference training sequence of the first modulation format to produce a first reconstructed

training sequence (ref);

comparing the (Fig. 6, blocks 70, 72, and 74, page 10, line 12-page 11, line 4 and page

12, lines 4-14)) training sequence to the first reconstructed training sequence to produce a first

error magnitude result (noise variance);

producing (Fig. 5, block 60, page 8, line 5-page 9, line 6) a second channel estimate

based on the training sequence assuming a second modulation format (8PSK);

applying (Fig. 6, block 68, page 10, line 12-page 11, line 11) the second channel estimate

to a reference training sequence of the second modulation format to produce a second

reconstructed training sequence;

comparing (Fig. 6, block 70, page 10, line 12-page 11, line 4 and page 12, lines 4-14) the

training sequence to the second reconstructed training sequence to produce a second error

magnitude result (noise variance); and

identifying the modulation format of the first RF burst as the one corresponding to the

smaller error magnitude (Fig. 5, block 86, page 12, lines 18-22).

Reference A does not discloses receiving a subsequent RF burst data frame from the

servicing base station, wherein the subsequent RF burst carries a plurality of modulated symbols;

processing the training sequence assuming the first modulation format to produce a

subsequent first error magnitude;

accumulating the subsequent first error magnitude with the first error magnitude to

produce an accumulated first error magnitude;

processing the training sequence assuming the second modulation format to produce a

subsequent second error magnitude;

accumulating the subsequent second error magnitude with the second channel energy to

produce an accumulated second error magnitude;

determining a smaller accumulated error magnitude from the first accumulated error

magnitude and the second accumulated error magnitude; and

identifying the modulation format of the subsequent RF burst as corresponding to the

smaller accumulated error magnitude.

However, Sahlin et al. discloses a method of detecting a modulation format (8PSK or

GMSK) which involves generating quality measures such as signal-to-noise ratios (which

respresent an error magnitude) to detect the modulation format (sections 0041-0044). Sahlin et

al. further discloses perfoming quality measurements on training signals (section 0047). Sahlin

et al. also discloses the quality measurements are performed for all subsequent bursts in a

received block (section 0075) to determine a total (accumulated) quality measurement for

detection of the modulation format (section 0075). Therefore, it would have been obvious to one

skilled in the art at the time the invention was made to perform the identification procedure as

disclosed by Reference A for multiple or subsequent bursts as taught by Sahlin et al. since Sahlin

states that averaging (accumulating) the quality measures over multiple bursts increases the

reliability of the detection (identification) (see section 0074).

Regarding claim 10, which inherits the limitations of claim 9, Reference A further

discloses the first modulation format is GMSK; and the second modulation format is 8PSK (Fig.

5).

Regarding claims 13-15, Reference A further discloses the limitations of claims 13-15

(see claims 1-3), including the method of claims 13-15 (see claims 1-3) performed in a wireless

terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line16) that comprises an RF front

end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF

front end (Fig. 8, blocks 104, 106, and 108); and a CODEC processing module communicatively

coupled to the baseband processor (Fig. 8, block 110, page 2, lines 2-16), wherein the receiver is

a GPRS receiver which allows coding/decoding as described herein.

Regarding claim 18, which inherits the limitations of claim 13, Reference A further

discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2,

line16 and page 8, lines 5-15).

Regarding claims 19-22, Reference A further discloses the limitations of claims 19-22

(see claims 1-4), including the method of claims 19-22 (see claims 1-4) performed in a wireless

terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line16) that comprises an RF front

end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF

front end (Fig. 8, blocks 104, 106, and 108).

Regarding claim 25, which inherits the limitations of claim 19, Reference A further

discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2,

line16 and page 8, lines 5-15).

Regarding claims 26-28, Reference A further discloses the limitations of claims 26-28 (see claims 8 and 10), including processing the first RF burst to produce a baseband signal; and extract the training sequence from the baseband signal (page 8, lines 5-page 9, line 6) wherein the method of claims 26-28 are performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line16) that comprises an RF front end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108); and a CODEC processing module communicatively coupled to the baseband processor (Fig. 8, block 110, page 2, lines 2-16), wherein the receiver is a GPRS receiver which allows coding/decoding as described herein.

Regarding claim 31, which inherits the limitations of claim 26, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2, line16 and page 8, lines 5-15).

Regarding claims 32-34, Reference A further discloses the limitations of claims 32-34 (see claims 8 and 10), including processing the first RF burst to produce a baseband signal; and extract the training sequence from the baseband signal (page 8, lines 5-page 9, line 6) wherein the method of claims 32-34 are performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line16) that comprises an RF front end (Fig. 8, blocks 100, and 102); and a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108).

Regarding claim 37, which inherits the limitations of claim 32, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2, line 16 and page 8, lines 5-15).

4.   Claims 5-7 11, 12, 16, 17, 23, 24, 29, 30, 35, and 36 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Sundaralingam (previously cited in Office Action 8/8/2005),

hereinafter referred to as Reference A in view of of Sahlin et al. (U. S. Patent No. 2004/0156448)

as applied to claims 1-4, 8, 10, 13-15, 18-22, 25-28, 31-34, and 37, and in further view of

Khullar et al. (previously cited in Office Action 8/8/2005).

Regarding claims 5-7, 11, 12, 16, 17, 23, 24, 29, 30, 35, and 36, Reference A and Sahlin

et al. disclose all the limitations of claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35, and 36 (see

above rejection of claims 1-4, 8-10, 13-15, 18-22, 25-28, 31-34, and 37) except comparing the

identified modulation format of the subsequent RF burst to the identified modulation format of

previous RF bursts of the data frame; demodulating the subsequent RF burst according to the

identified modulation format of the subsequent RF burst; and discarding the prior RF bursts of

the data frame when the identified modulation format of the subsequent RF burst compares

unfavorably to the identified modulation format of prior RF bursts or reprocessing the prior RF

bursts of the data frame according to the identified modulation format of the subsequent RF burst

when the identified modulation format of the subsequent RF burst (of previous data frames)

compares unfavorably to the identified modulation format of the prior RF burst.

Khullar et al. discloses a very similar method/apparatus for receiving RF burst and for

determining a modulation scheme (GMSK or 8PSK) which includes generating channel energies

(through channel estimation) and comparing the energies (highest energy to detect the

modulation scheme (Fig. 4, column 8, lines 24-67). Khullar et al. also discloses comparing the

identified modulation format of the subsequent RF burst to the identified modulation format of

previous RF bursts of the data frame (column 9, lines 17-30); demodulating the subsequent RF

burst according to the identified modulation format of the subsequent RF burst (column 9, lines 1-17); and discarding (setting soft values to zero) the prior RF bursts of the data frame when the identified modulation format of the subsequent RF burst compares unfavorably to the identified modulation format of prior RF bursts (column 9, lines 42-57) or reprocessing (converting) the prior RF bursts of the data frame according to the identified modulation format of the subsequent RF burst when the identified modulation format of the subsequent RF burst compares unfavorably to the identified modulation format of the prior RF burst (column 9, lines 17-30). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the method/apparatus of Reference A and Sahlin et al. with the teachings of Khullar et al. in order ensure that information received from unreliable bursts (bursts which compare unfavorably to the identified modulation format of prior RF bursts) does not have an adverse effect on the subsequent signal processing (Khuller et al., column 9, lines 42-57).

Conclusion

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.
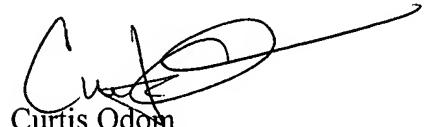
Curtis Odom
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